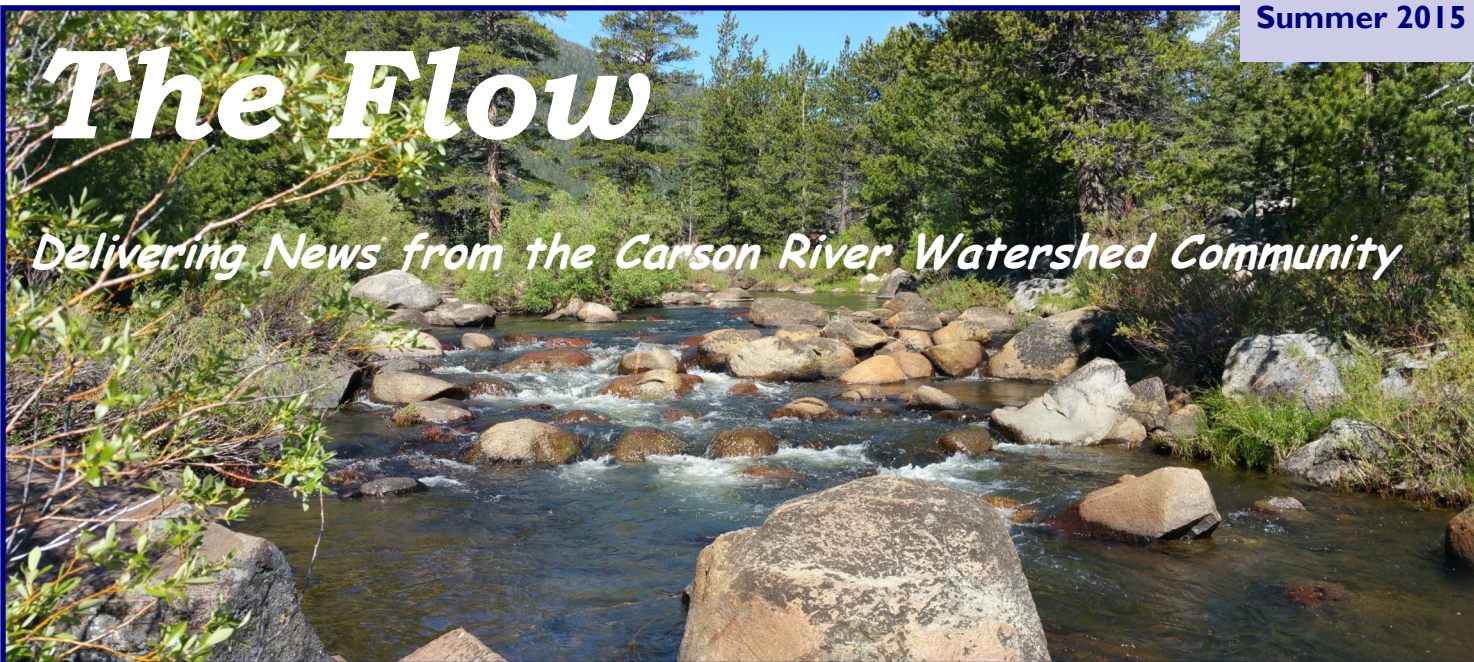


# The Flow

*Delivering News from the Carson River Watershed Community*



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## University of Nevada, Reno Launches Water for the Seasons Project

By Loretta Singletary, Ph.D., Desert Research Institute

Researchers from the University of Nevada, Reno; Desert Research Institute; and the US Geological Survey recently launched a new project for the Truckee and Carson River System called Water for the Seasons. This project partners scientists with community water managers and water rights holders to explore new strategies and solutions for dealing with extreme climate events, such as droughts and floods.

This four year pilot study, which began in 2014, is funded by the National Science Foundation and the U.S. Department of Agriculture. The study focuses on the Truckee and Carson River System as a template to learn how to best link science with decision-making in snow-fed arid land river systems. The program's goal is to establish greater climate resiliency or capacity for local communities to adapt and respond effectively to extreme climate events.

During the first phase of this project, Loretta Singletary of the University of Nevada Cooperative Extension is working with UNR doctoral candidates Kelley Sterle and Karen Simpson to interview approximately 60 community stakeholders and gather perspectives and historical knowledge about droughts, floods, and other extreme climate events. Our local stakeholders have valuable knowledge that can inform the science of this research project. Stakeholders include federal, state, and local water



The Truckee Canal, delivering water to the Lahontan Reservoir on the Carson River. Photo by CWSD.

(Continued on page 3)



## Watershed-Literacy Action Plan and Survey

By Courtney Walker, Carson Water Subconservancy District

Early this year the Carson River Coalition's Education Working Group (EWG) developed, and the CWSD Board adopted, the Watershed-Literacy Action Plan (WLAP) for the Carson River Watershed. This plan, a supplement to our Carson River Watershed Adaptive Stewardship Plan, was created to help guide and evaluate environmental education and outreach efforts occurring in the watershed. The purpose of the WLAP is to:

*"Increase awareness that human behavior affects watershed health and to use education to promote changes in behavior that will ultimately improve habitat, water quality, water supply, and benefit the watershed as a whole."*

The WLAP provides an action framework to achieve the EWG's vision by moving our target audiences along the change continuum from awareness to action with the goal of obtaining long-term environmental benefits, including water quality improvements.

One of the main objectives in the WLAP is to conduct a watershed-wide baseline survey to assess the existing level of watershed residents' knowledge or literacy about basic watershed concepts. This is critical as the survey results will provide a base from which to measure the effectiveness of our outreach and education programs at increasing overall watershed-literacy and where gaps in our outreach efforts may exist.

CWSD hired Responsive Management, an internationally recognized public opinion and attitude survey research firm specializing in natural resource and outdoor recreation issues, to conduct the watershed-literacy survey. The EWG worked closely with Responsive Management to develop baseline, repeatable survey questions. The telephone survey of Carson River Watershed residents is being conducted in June 2015, with a goal of obtaining 800 responses distributed throughout the survey area.



River Wranglers Executive Director Linda Conlin works throughout the watershed educating children and adults. Photo by Brenda Hunt.



Students from Dayton High School Marine Science class look for macroinvertebrates as a measure of water quality. Photo by Linda Conlin.

Based on survey results and the gaps identified, the EWG may modify watershed education and outreach programs and implement a media plan to ensure that messages relating to non-point source pollution are reaching our target audiences. Follow-up surveys will be conducted a minimum of every five years to measure the increase in understanding of basic watershed concepts and adapt efforts as needed based on survey results. Thank you if you received a phone call and completed the survey. We are very excited to see this plan in motion and hope it will lead to long-term water quality improvements!

## Carson River Watershed Ethnographic Research

By Melissa Shaw-Granat, Northern Arizona University

This summer, Melissa Shaw, a graduate student studying anthropology with the Northern Arizona University in Flagstaff, is participating in an internship with CWSD. Melissa will spend approximately eight weeks assisting CWSD; her main project is to apply anthropological research methods to expand on findings of the watershed-literacy telephone survey (See article Page 2).

As noted in the previous article, the goal of the watershed-literacy survey is to assess the Carson River Watershed residents' baseline knowledge about watershed concepts. Our watershed is diverse, and this effort will be a pilot process to engage with a specific segment of our population. Using a combination of focus groups, one-on-one interviews, and intercept surveys in a technique known as Rapid Assessment Response Evaluation (RARE), Melissa, CWSD, and our CRC partners including The Nature Conservancy will meet with members of the Hispanic community to talk about the Carson River. CWSD plans to use information gathered from the watershed-literacy survey and the interview process to better guide and inform outreach efforts and education initiatives throughout the watershed.



Melissa has nearly 20 years experience as a land use and environmental planner, and the internship with CWSD is an opportunity to blend anthropology research techniques with her environmental planning background. As time permits Melissa will assist CWSD with other projects and reports. Please contact Brenda Hunt or Melissa Shaw at 775.887.9005 if you are interested in participating in the study.

(Continued from page 1)

managers; representatives from the Fallon Paiute-Shoshone Tribe, Pyramid Lake Paiute Tribe, and Washoe Tribe of Nevada and California; agricultural producers; natural resource managers; urban planners and economic developers.

The Water for the Seasons team will continue conducting interviews through the month of August and plan to have their first Stakeholder Affiliate Group workshop in September.

Researchers will use stakeholder input to create models that integrate surface and groundwater data, evapotranspiration rates, climate variables, reservoir storage and water release options, and water use priorities under different climate scenarios. The resultant suite of models can be used for planning purposes by water managers, agricultural producers, and municipalities in snow-fed arid land systems around the world.

For more information on the Water for the Seasons project, visit the UNR Academy for the Environment's website: <http://environment.unr.edu/academy/waterfortheseasons.html> and Cooperative Extension's Living with Drought website: <http://www.unce.unr.edu/programs/sites/drought/>.





## River and Ranches Education Day

By Sarah Green, Alpine Watershed Group

On May 18th, the Alpine Watershed Group (AWG) and Ace Hereford Ranch hosted the student body of Diamond Valley Elementary in Markleeville, California for a day of Rivers and Ranches Education. During this educational event, 70 students visited the Ace Hereford Ranch and participated in activities that covered topics such as water quality monitoring, native plants, and watershed protection.

The intent of the Rivers and Ranches Program is to aid ranches in implementing grazing practices which reduce the runoff of bacteria (fecal coliform) from fields and into surface waters. This program is sponsored by the Sierra Business Council and the Lahontan Regional Water Quality Control Board. A long-term focus on land stewardship will support a secure food supply, protect our rivers, and preserve open space.

AWG believes getting the community engaged in outdoor education and connecting them with their local rivers fosters a deeper appreciation of Alpine County's watersheds. The Alpine Watershed Group's involvement in the Sierra Nevada AmeriCorps Partnership has greatly expanded our watershed education capacity over the past two years.



Students learn about watershed protection at the Ace Hereford Ranch in Alpine County, CA.  
Photo by Sarah Green.

### Upcoming Alpine County Events

#### 2015 Markleeville Creek Day – Restoration Work Day in the Upper Carson

The Alpine Watershed Group's 16th Annual Markleeville Creek Day will take place on **Saturday, September 12th from 9 a.m. – 3 p.m.** Participants will meet at the Markleeville Library Park at 9 a.m. and join one of several restoration projects occurring throughout the watershed. Projects will include invasive weed removal, stream bank stabilizing, willow planting, and the development of a native plant demonstration garden. We are encouraging everyone to RSVP for this year's event. Contact Nicole Lutkemuller at 530-694-2327 or [awg.nicole@gmail.com](mailto:awg.nicole@gmail.com).

#### Alpine Aspen Festival - Explore Your Watershed

The Alpine Watershed Group and Friends of Hope Valley are hosting the 2nd Annual Alpine Aspen Festival on the weekend of **October 10-11th**. This year's festival will be nestled in the heart of Hope Valley, California.

The event will offer workshops, tours, and hikes which allow participants to learn about cultural history, ranching, geology, ecology, and watershed restoration efforts. The goal is to raise awareness of the role mountain streams and meadows play in providing water for Western Nevada and California's Bay Delta. Please go to [www.AspenFest.Org](http://www.AspenFest.Org) and sign up today!



For more information about the Alpine Watershed Group, please contact us at 530-694-2327 or visit our website at [www.alpinewatershedgroup.org](http://www.alpinewatershedgroup.org).

## Washington Fire Burns in Alpine County

By Sarah Green, Alpine Watershed Group

At the time of this publication, firefighters are working to contain the Washington Fire that has been burning in the Upper Carson River Watershed since June 19, 2015. We would like to acknowledge firefighting efforts, as crews are working around the clock to build containment lines around the fire. We also want to thank Alpine County staff for providing constant public information updates to ensure the safety of life and property for Alpine County residents and visitors.

This fire is a devastating blow to the natural resources in this watershed. Once the fire has been extinguished, restoration will be needed to protect the headwaters of the East Fork of the Carson River. Alpine Watershed Group is anticipating some of the work that will be needed, in partnership with the US Forest Service, Alpine County, Alpine Fire Safe Council, and other local entities. We will be looking to our watershed community for support and volunteer assistance to restore this special area. If you are interested in being involved, please contact Sarah Green, [awg.sarah@gmail.com](mailto:awg.sarah@gmail.com).



Washington Fire, taken from a ridgeline north of Markleeville.  
*Photo by Sarah Green.*

## Welcome Daniel Anderson to Carson City Weed Coalition

By Rich Wilkinson, Carson City Open Space Program

We would like to introduce the new coordinator for the Carson City Weed Coalition, Daniel Anderson. Daniel, who started work in May 2015, is a senior at UNR studying Geography and Natural Resources. "I have been working with natural resources and GIS for the last seven years. Working with the City and the State of Nevada to manage our natural resources is very important to me. I am very excited to start working with the Coalition to keep things moving forward and treating our invasive weed problems," said Daniel about his new position. Daniel replaces Margie Evans, who left the position in 2014.

The Carson City Weed Coalition is now located within the Carson City Parks, Recreation and Open Space Department. The main goal is to get the coalition operating again and to continue quarterly meetings and public outreach. If you have any questions please feel free to contact Daniel at:

Carson City Weed Coalition  
3303 Butti Way, Building #9  
Carson City, Nevada 89701  
(775)887-2262 Ext. 7035 Office  
(775)887-2145 Office Fax  
[dhanderson@carson.org](mailto:dhanderson@carson.org)





## Carson River Coalition and CWSD Host Floodplain Management Forum and Watershed Bus Tour

By Debbie Neddenriep, Carson Water Subconservancy District

Living in the desert and facing the fourth year of drought in Northwestern Nevada, one wouldn't think flooding would ever be a concern; however, flooding often occurs unexpectedly and causes major losses in Northern Nevada. With this fact in mind, CWSD held a floodplain forum in April to highlight actions being taken throughout the Carson River Watershed to mitigate flood dangers to life and property. Over sixty people attended the forum held at the Dayton Community Center in Old Town Dayton. Presenters discussed Flood Modeling and Mapping efforts, flood hazards, and projects which identify solutions for potential flooding scenarios. Rob Palmer, the State of Nevada's Floodplain Manager, gave the well-received keynote address. He described and showed images of flooding in Nevada during 2014, despite the drought, and urged everyone to visit [NevadaFloods.org](http://NevadaFloods.org) to identify, avoid, and mitigate potential flood risks.

CWSD would like to thank all of the presenters for sharing valuable information! [The presentations from the Floodplain Management Forum are on CWSD's website on the Floodplain Management page.](#)



Floodplain Management Forum participants listen to keynote speaker Rob Palmer, Nevada State Floodplain Manager. *Photo by Brenda Hunt.*

Nearly 50 people joined CWSD's annual Get on the Bus Tour of the Carson River Watershed. The two-day tour provided participants a survey course of the watershed from its headwaters to its terminus.

Approximately 30 speakers informed participants on topics such as river restoration, wastewater treatment, important bird areas, invasive species, and water supply at various tour stops. Participants enjoyed visiting Hope Valley, South Tahoe Public Utility District's Diamond Valley operations, Dangberg Home Ranch Historic Park, The Nature Conservancy's River Fork Ranch, Fuji Park/Baily Pond, Fort Churchill, Lahontan Dam, and Stillwater National Wildlife Refuge.

This tour also demonstrates how agricultural, municipal, and environmental challenges facing our watershed are being addressed through cooperation and collaboration. Thank you to all the speakers, sponsors, hosts, and attendees for making this year's tour another success! We try to make the tour a bit different each year, so we hope you consider joining us next year. Look for "Get on the Bus" tour information in the Spring!



Panorama of Stillwater National Wildlife Refuge, the bottom of the Carson River Watershed. *Photo by Brenda Hunt.*

## Low Impact Development in the Carson River Watershed

By Lynn Zonge, Resource Concepts, Inc.



Curb cuts in this parking lot convey runoff and infiltrates in a bioretention basin.

Photo by [urbanlandscapes.info](http://urbanlandscapes.info).

Resource Concepts, Inc. recently assisted CWSD in completing *Low Impact Development in the Carson River Watershed*. This handy, colorful 20 page document was prepared to assist local jurisdictions to make Low Impact Development (LID) a part of everyday business.

Urban stormwater runoff is one of the main sources of Non-point Source (NPS) pollution in the United States. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves across impervious surfaces/hardscapes like roads, driveways and rooftops, it picks up and carries away natural and human-made pollutants.

These pollutants, like oil, trash, fecal

matter, soil sediments, pesticides, and fertilizers are deposited into watershed lakes, streams, wetlands, rivers, and eventually even our ground water.

LID practices reduce the amount of runoff and filter stormwater by slowing, holding, infiltrating, and evaporating stormwater onsite. LID practices filter out pollutants such as oil, bacteria, sediment, and nutrients by allowing the runoff to seep through onsite vegetation and soil. Urbanized areas in Nevada can incorporate LID practices into their stormwater management repertoire and gain many benefits that enhance water quality and overall watershed health. In addition, LID practices can be used to address stormwater, limiting the need for large infrastructure that municipalities do not have the financial or staff resources to build or maintain.

Reading through the document one can learn:

- What stormwater is and how to use it as a resource rather than a waste product
- LID benefits and practices in northern Nevada including the various types, designs, alternatives, maintenance needs, and limitations
- Examples of LID practices in northern Nevada
- How to incorporate LID into the fabric of the planning process
- Various LID incentives

[The document is available on the CWSD website on the Water Quality page.](#)



Gutter downspout is directed to convey roof runoff into a vegetated rain garden.

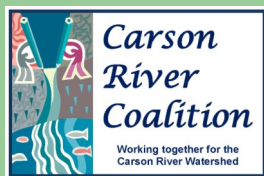
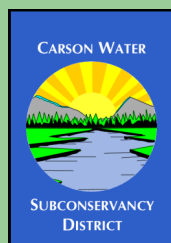
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**Lawn Replacement/Alternatives - July 28, 2015. 6-8pm**, Douglas County Community Center, Gardnerville, NV. Contact Steve Lewis, 775-782-9960.

**Nevada Drought Forum Public Meetings - July 14, August 19 & 26, 2015.** Carson City, Elko and Las Vegas. For details visit: [http://drought.nv.gov/Meetings/2015/Public\\_Meeting\\_Notification/](http://drought.nv.gov/Meetings/2015/Public_Meeting_Notification/)

**Markleeville Creek Day - September 12, 2015.** Markleeville, CA  
<http://www.alpinewatershedgroup.org/>

**Nevada American Planning Association Conference - September 13-15, 2015.** University of Nevada, Reno. Cost \$150 <https://sites.google.com/site/nvchapterapa/state-conference>

**Alpine Aspen Festival - October 10-11, 2015.** Alpine County, CA  
<http://www.alpinewatershedgroup.org/>

**Nevada Water Resources Association Fall Symposium - October 19-20, 2015.** Reno, NV.  
<http://www.nvwra.org/2015-fall-symposium>

**Carson River Coalition Main Meeting - October 19, 2015.** 9-12pm, keynote speaker: Daniel Beard, author of *Deadbeat Dams*, contact Brenda Hunt, 775-887-9005.

**Nevada Weed Management Association: Medusa Head Symposium—October 26—27, 2015; State Conference - October 28-29, 2015.** Sparks, NV, contact Betsy Macfarlan, 775.289.7974, <http://nvwma.org/events.html>

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<https://www.facebook.com/carsonriver>



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